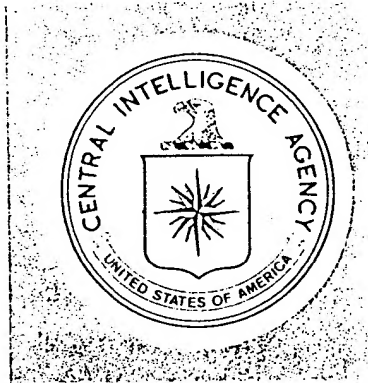


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*A Dollar Cost Comparison of Soviet and US  
Defense Activities, 1966-1976*

January 1977

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A Dollar Cost Comparison of Soviet  
and US Defense Activities  
1966-1976

Introduction

This report presents estimates of the dollar costs of Soviet defense activities and compares them with US defense outlays.

The military establishments of the Soviet Union and the US are difficult to compare because they differ considerably in missions, structure, and characteristics. The common denominator used here to measure the defense activities of the two countries is dollar cost. The approach is to estimate how much it would cost to produce and man in the US a military force of the same size and with the same inventory of weapons as that of the Soviets, and to operate that force as the Soviets do. These estimated dollar costs are then compared year by year with US outlays for similar programs.

Such an approach can provide a general appreciation of the overall magnitude of the defense activities in the two countries. Dollar cost data also provide a means for aggregating dissimilar elements of each country's military programs into comparable categories and thus can show trends and relationships between the two defense establishments that are difficult to discern and measure in other ways.

Price Base. The data presented here are expressed in average calendar year 1975 dollars. Constant dollar figures are used so that trends in the cost estimates will reflect changes in military forces and activities rather than the effects of inflation. The US data are for fiscal years, while the dollar costs of Soviet programs are for calendar years.

Comparisons. The definition of defense activities used in this comparison encompasses those activities

that in the US would be funded by the Department of Defense (less foreign military assistance), defense nuclear programs such as those funded in the US by the Energy Research and Development Agency (ERDA), and the activities of the US Coast Guard and the Soviet militarized security forces (border guards and internal security troops). Excluded from this definition are space activities that in the US would be funded by NASA, civil defense except for the pay and allowances of uniformed personnel engaged in such programs, and veterans' programs.

US Data. US dollar cost data are in terms of outlays derived from the Total Obligational Authority (TOA) series in *The Five-Year Defense Program* issued by the Department of Defense in October 1976. Coast Guard and Selective Service outlays and ERDA outlays related to nuclear weapons and naval reactors are included. The US data have been converted to constant prices and have been adjusted to achieve accounting coverage comparable with the dollar estimates made for the USSR. The US figures in this report, therefore, do not match actual budget authorizations or appropriations.

Reliability. The estimates of the dollar costs of Soviet activities presented in this report should be viewed as having a margin of error which could be substantial for some items. Our confidence is highest in the aggregate totals but is considerably less at the lower levels of aggregation. Moreover, the reliability of our dollar cost estimates varies from category to category, depending on the reliability of our estimates of the size and characteristics of Soviet military forces and on the accuracy of the cost factors applied to those estimates.

We place our greatest confidence in the investment category--procurement of weapons and equipment and construction of facilities--which makes up about one-third of the total estimated dollar costs of Soviet defense activities for the period.

Manpower costs, comprising about 40 percent of the total estimated dollar costs of Soviet activities, are the largest and most reliable component in the operating category. For other operating costs, repre-

senting some 15 percent of the total dollar cost of defense activities, both the quantity and quality of information are less reliable.

The estimated dollar costs for Soviet RDT&E should be regarded as significantly less reliable than those for either investment or operating.

On balance, we believe that the overall dollar cost estimate for Soviet defense activities is unlikely to be in error by more than 15 percent. This judgment, while informed, is nonetheless subjective and not the result of statistical measurement.

Limitations. Because of the problems of comparing such disparate activities, the uncertainties of the Soviet data, and the organization of the US data, the comparisons in this paper should not be considered precise measurements. Any common denominator used for comparative sizing is imperfect, and its limitations must be understood in interpreting such comparisons. Any conclusions drawn from this dollar cost analysis must be tempered by an appreciation of what it does not do:

- It cannot be used alone to draw inferences about the relative military effectiveness or capabilities of US and Soviet forces. Other data, such as the size and technical characteristics of the forces, the geographical locations of the two countries, their allies' capabilities and requirements, strategic doctrine and tactical concepts, morale, command and control capabilities, and other information must also be considered for such judgments.
- It does not measure actual Soviet defense expenditures or their burden on the Soviet economy. These questions are addressed by different analytical techniques yielding estimates of the ruble costs of Soviet military programs.
- It does not reflect the Soviet view of the distribution of the USSR's defense effort. The price structures in the two countries are

substantially different. Additionally, neither the system of accounts nor the structuring of expenditures by military mission is the same for the Soviet Ministry of Defense and the US Department of Defense.

Index Number Problem. Finally, dollar cost calculations tend to overstate Soviet military activities relative to the US because of a basic measurement problem common to all international economic comparisons and known to economists as the index number problem. If Soviet decisionmakers were confronted with the US dollar price structure that is used for our dollar cost analysis, rather than the ruble prices they in fact have to pay, they undoubtedly would choose a different and cheaper (in dollar terms) mix of manpower and equipment. While we cannot measure the degree of overstatement that this consideration introduces, it clearly is not large enough to alter the basic conclusion that Soviet military activities overall are growing and currently are significantly larger than those of the US.

## Dollar Cost Comparisons

### Total Defense Costs

For the 1966-1976 period as a whole, the cumulative estimated dollar costs of Soviet defense activities and US defense outlays are about the same. As shown in Figure 1, however, the trends of the defense activities of the two countries are quite dissimilar. When expressed in *constant US prices*, which measure growth in real terms, the trend of the dollar costs of Soviet defense activities is one of continuous growth throughout the period, averaging about 3 percent a year. Growth is evident in nearly all the major elements of the Soviet defense establishment.

The trend of US defense outlays is in sharp contrast. Despite increases in *current dollar terms*, US outlays in *constant dollars* show a continuous decline after 1968, and since 1972 they have been below the 1966 level. This decline reflects reductions in nearly every major component since the Vietnam buildup of the late sixties.

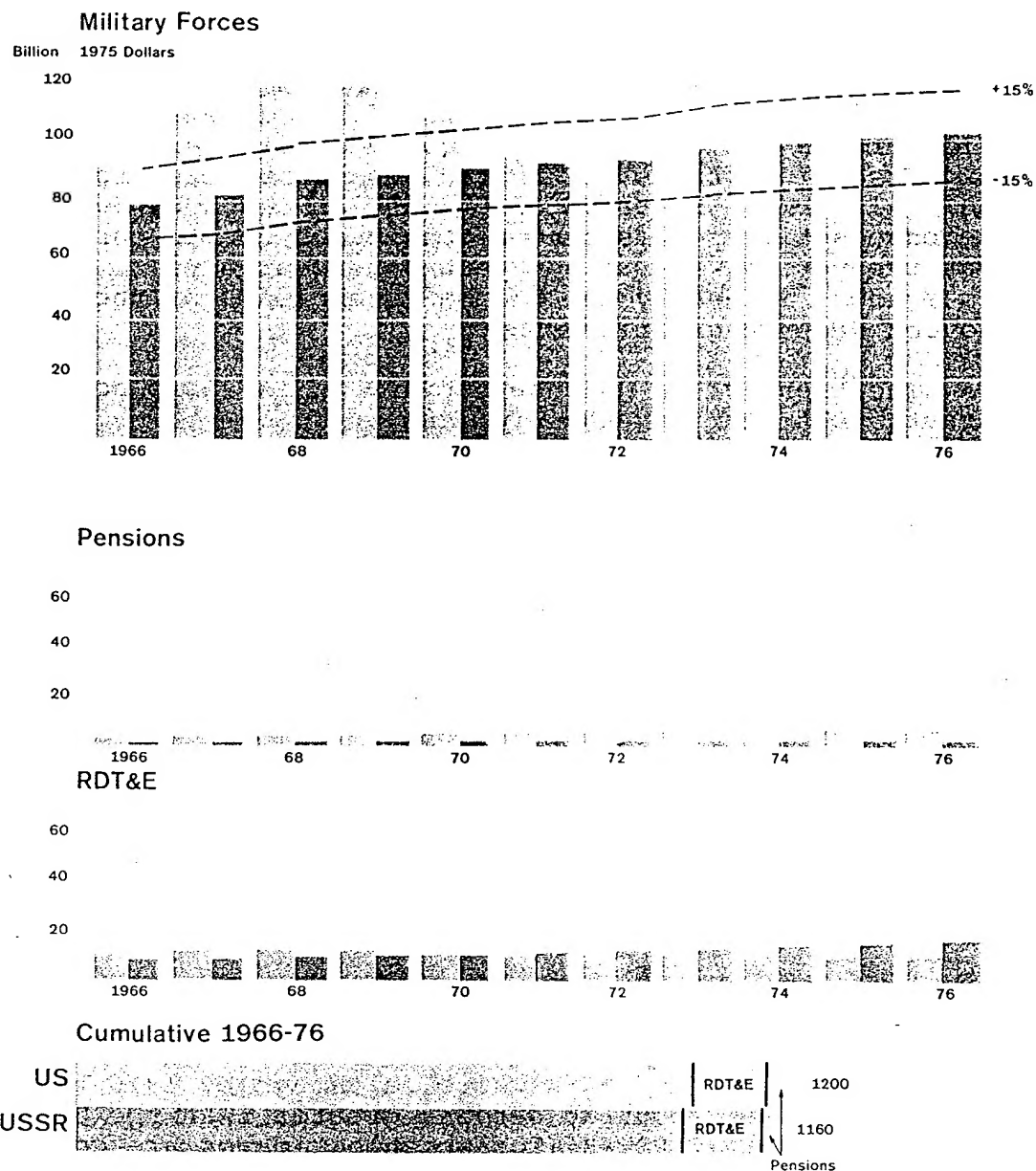
As a result of these diverging trends, the estimated dollar costs of Soviet defense activities exceed US defense outlays by a widening margin in every year after 1971. At about 120 billion dollars (1975 prices) the estimated costs of Soviet defense activities for 1976 are about one-third higher than total US defense outlays. If pensions are excluded from both sides--leaving only the costs of current defense activities--the estimated dollar costs of Soviet activities in 1976 exceed those of the US by about 40 percent.

If all personnel costs are removed from both sides, US defense outlays exceed the estimated dollar costs of Soviet defense activities by about 10 percent over the 1966-1976 period as a whole, although by 1976 the Soviet level is about 30 percent greater than the US. Alternatively, if RDT&E (for which estimates are considerably less reliable than those for other activities) and pensions are subtracted from each side, the estimated Soviet figure in 1976 is about 35 percent higher than that of the US, and the cumulative totals are about the same.

Figure 1

# Total US and Soviet Defense Activities, 1966-1976

A Comparison of US Outlays and Estimated Dollar Costs of the Soviet Activities if Duplicated in the US



The dollar cost estimates reflect the cost of producing and manning in the US a military force of the same inventory of weapons and size as that of the Soviets, and operating that force as the Soviets do. The costs for Soviet investment and operating are best estimates, with possible error margins of 15 percent displayed. The estimated costs of Soviet RDT&E are derived in the aggregate, using a less certain methodology, and should be viewed only as rough measures. For this reason, they have been excluded from the totals and are shown separately. Military pensions, which reflect payments for past rather than present defense activities, have also been excluded from the totals and are shown separately. The US defense costs are in terms of outlays based primarily on Department of Defense Total Obligational Authority (TOA) in *The Five-Year Defense Program*, October 1976. The US data are for fiscal years, and the estimated dollar costs of Soviet programs are for calendar years.



### Military Investment

The trends in the cost of military investment--the procurement of weapons and equipment (exclusive of RDT&E costs) and the construction of facilities--follow closely those for total defense costs in both countries. The dollar costs of Soviet investment increase continuously over the period, driven primarily by advanced weapons programs, particularly new aircraft and succeeding generations of missile programs. US military investment grew rapidly during the Vietnam buildup and has declined steadily since 1968. Thus the dollar costs of Soviet investment exceed US outlays by increasing proportions after 1970, and in 1976 are about twice the US level. For the 1970-1976 period, the Soviet total is about 50 percent greater than that for the US.

### Operating Costs

Operating costs make up the largest share of the total defense figure for both countries. US outlays for operating military forces exceed the dollar cost of Soviet operating activities until 1973. Since then the Soviet activity level has been higher in dollar cost terms. For 1976, the estimated dollar cost of Soviet operating activities, exclusive of pensions, is about 15 percent above US outlays.

### Military Manpower

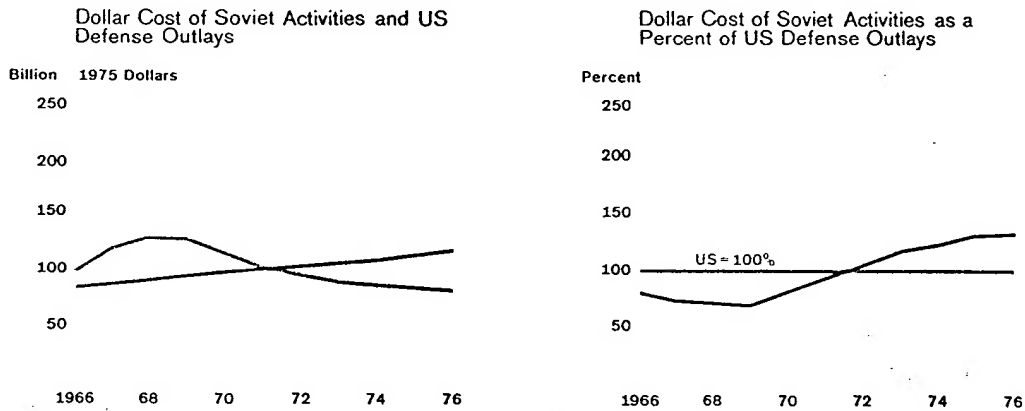
Military manpower trends parallel those for total costs in the two defense establishments. Estimated Soviet military manpower grows throughout the period, increasing by more than 800,000 men between 1966 and 1976. Most of this is in the ground forces, although there are important increases in strategic forces as well. The level of US military manpower has fallen steadily since the peak of the Vietnam buildup in 1968, and in 1976 is less than in 1966.

The Soviets have historically maintained a large military force which has a broader range of responsibilities than the US military does. In Figure 3, the "USSR Total" line includes border guards, internal

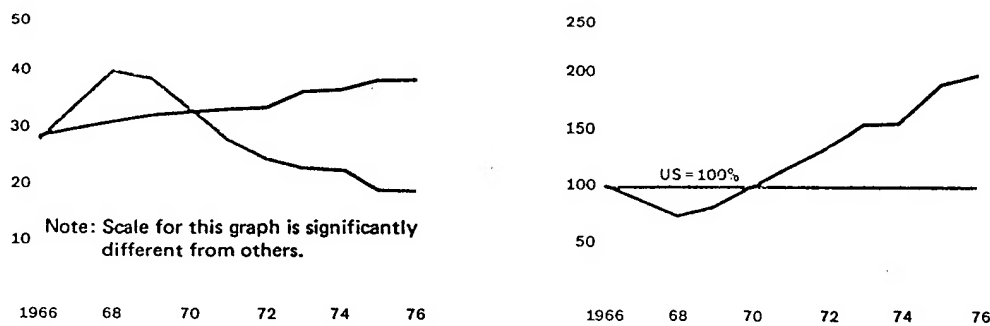
Figure 2

# **US and Soviet Investment and Operating, 1966-1976** A Comparison of US Outlays and Estimated Dollar Costs of the Soviet Activities if Duplicated in the US

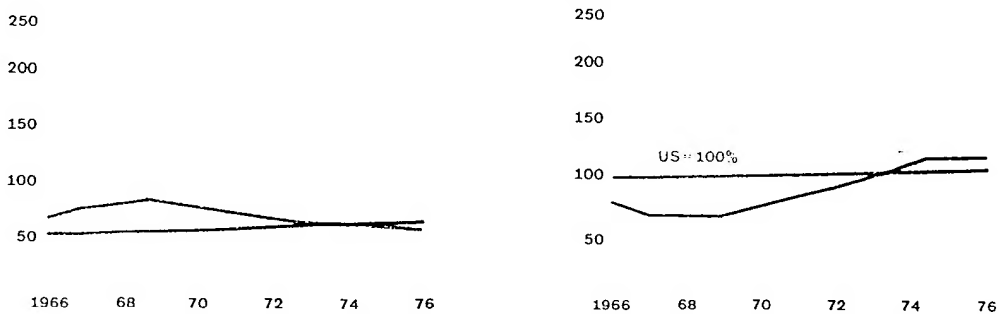
## **Total Defense Costs (less pensions)**



## **Investment**



## **Operating (less pensions)**



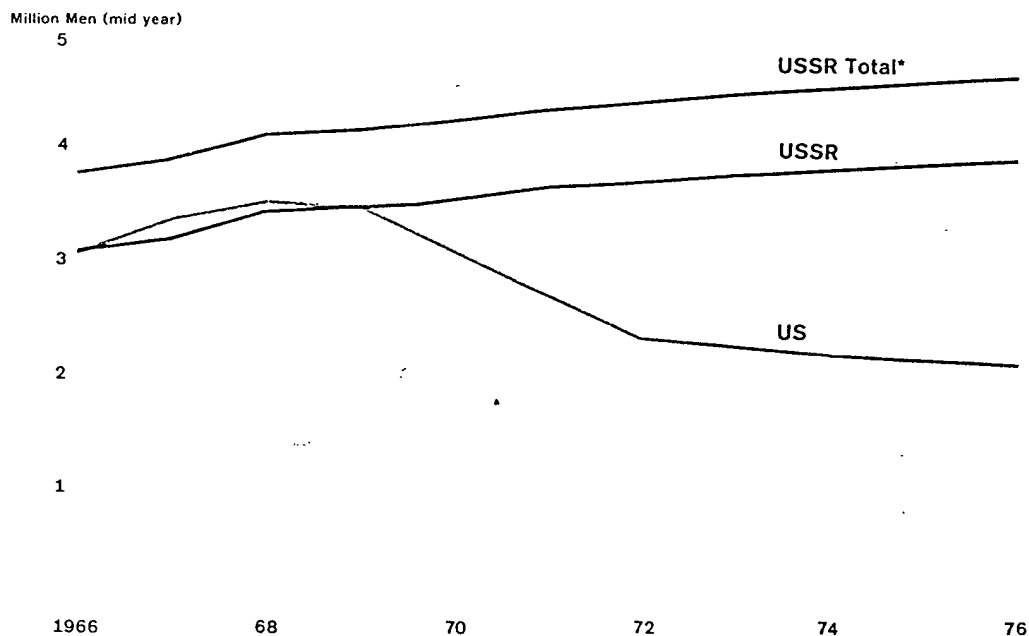
## **Cumulative 1966-76**

US	Investment	Operating	1025
USSR	Investment	Operating	1005

Investment includes all costs for procurement of military hardware and for the construction of facilities, but excludes RDT&E. Operating includes all personnel-related costs (with the exception of pensions) and all costs associated with the operation and maintenance of weapon systems and equipment.

Figure 3

### US and Estimated Soviet Active Military Manpower, 1966-1976



\* The USSR total includes border guards, internal security troops, and construction troops, for which the US Armed Forces have no counterpart. The lower USSR line excludes these men.

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security troops, and construction troops--forces for which the US has no counterparts. These forces are excluded from the lower Soviet line, but even so, Soviet military manpower in 1976 is about twice the US total for that year.

#### Military Mission Comparison

Another way to compare costs of military activities is by the mission they are designed to support. The mission definitions in this report accord with the guidelines outlined in the Department of Defense's *Defense Planning and Programming Categories (DPPC)*.

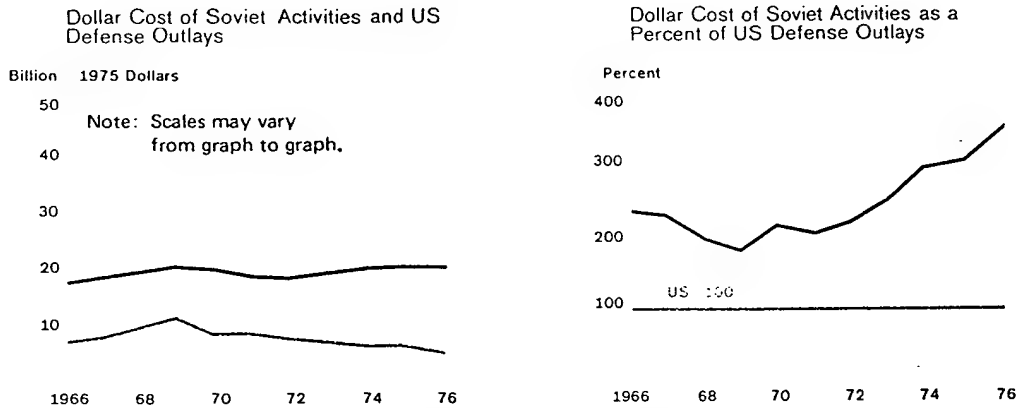
Strategic Forces. Strategic forces include all those forces assigned to intercontinental and peripheral attack, strategic defense, and strategic command, control, and warning. Over the 1966-1976 period,

Figure 4

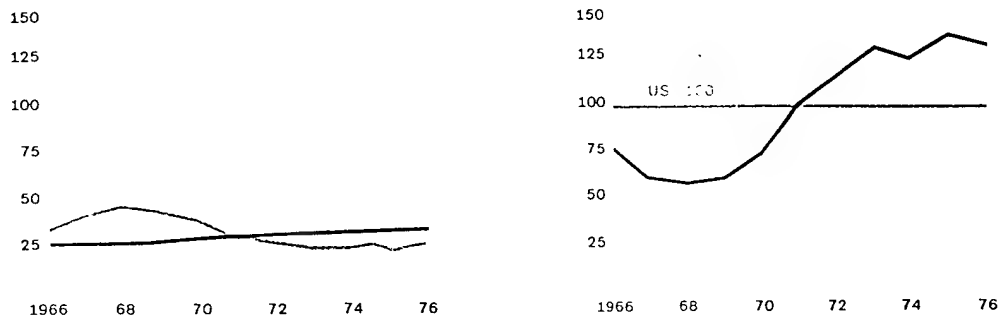
# US and Soviet Major Missions, 1966-1976

A Comparison of US Outlays and Estimated Dollar Costs of the Soviet Activities if Duplicated in the US

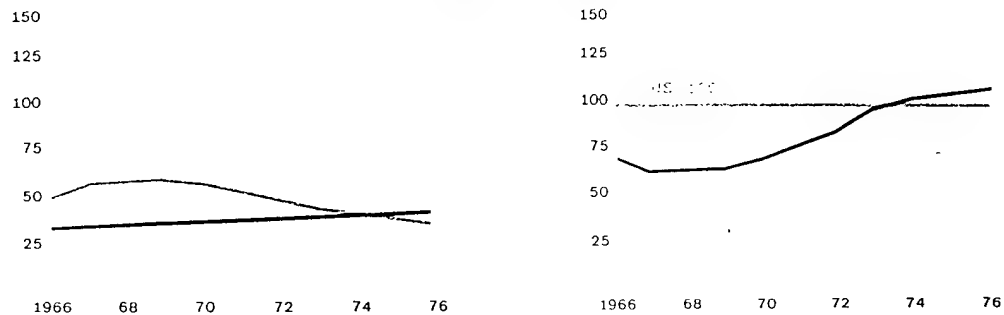
## Strategic Forces



## General Purpose Forces



## Support Forces

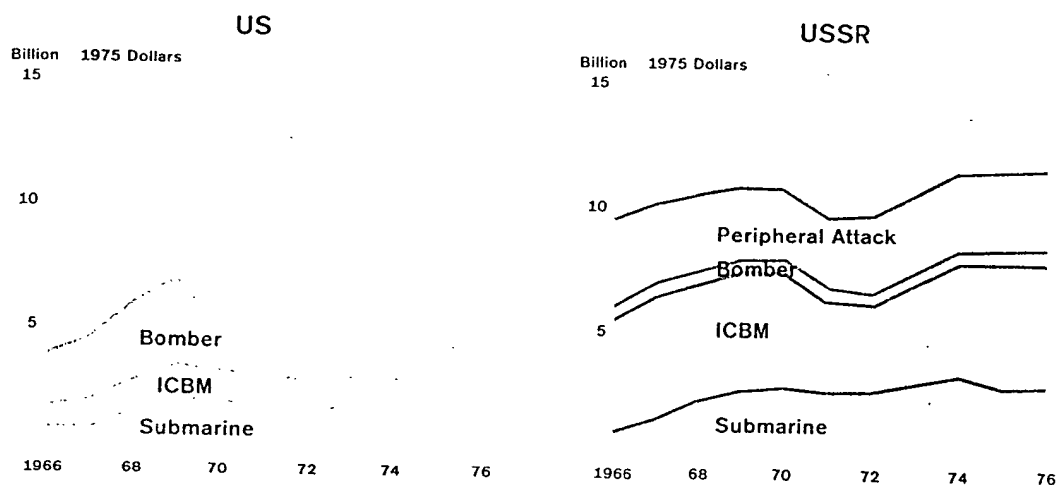


## Cumulative 1966-76



Figure 5

# **US and Soviet Forces for Strategic Offense, 1966-1976** A Comparison of US Outlays and Estimated Dollar Costs of the Soviet Activities if Duplicated in the US.



Note: The strategic offense mission is defined according to the US Defense Planning and Programming Categories of April 1976. Minor adjustments have been made to attain comparability with Soviet data. Costs for pensions, nuclear materials for warheads, and RDT&E are excluded.

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the level of Soviet activity for strategic forces measured in dollars has been two and one-half times greater than that of the US. Estimated dollar costs for Soviet strategic forces have greatly exceeded US outlays throughout the period, with the difference growing since 1969. In 1976, the Soviet level is over three and one-half times that of the US.

Within the strategic force mission, Soviet forces for intercontinental attack account for about 45 percent of the total for the 1966-1976 period. US outlays for intercontinental attack forces, while only half of the estimated dollar cost of the Soviet forces, account for about 70 percent of US strategic outlays for the period. Soviet peripheral forces, for which the US has no comparable force, account for about 15 percent of the total Soviet strategic mission.

Within the respective intercontinental attack forces, the differing emphasis on weapons is reflected in the costs. Over 60 percent of the estimated dollar costs of Soviet activities are for the ICBM force, compared to only about 20 percent for

the US. On the other hand, outlays for the US bomber force comprise about 40 percent, compared to a Soviet share of 5 percent.\* While the Soviets exceed the US level of activities for ICBMs and submarines in every year of the period, the US outlay for bombers is higher every year.

General Purpose Forces. General purpose forces include all ground, tactical air, naval, and mobility (airlift and sealift) forces. Over the 1966-1976 period, US outlays for general purpose forces exceed estimated dollar costs of Soviet activities by about 10 percent. Since 1971, however, the Soviet level is larger than that of the US--one-third greater in 1976.

Within both the US and Soviet general purpose forces, land forces take the largest share of the cost. Outlays for US land forces decrease after 1968, however, while the estimated dollar costs of Soviet activity increase steadily. In 1976, the Soviet level of activity for these forces, measured in dollar terms, is about 80 percent greater than that of the US.

The second largest share for both countries, in terms of dollar costs, is for the naval forces. The costs of these forces remain relatively constant for both countries over the period. In 1976 estimated dollar costs of Soviet activities are about 20 percent higher than US outlays.

The US outlays for tactical air forces (including naval attack carriers) are greater than the estimated dollar costs of comparable Soviet forces. Soviet activities are increasing, however, while US outlays have been decreasing since 1968. US outlays in 1976 are about 20 percent greater than dollar costs of the Soviet force.

Support Forces. The support forces include those falling within the categories outlined in the DPPC as auxiliary forces, mission support forces, and central

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\* Backfire aircraft assigned to Long Range Aviation are included in peripheral attack forces and those assigned to the Navy are in general purpose forces.

support forces. Included are military space programs, the US Coast Guard, Soviet border guards, civil defense, major headquarters, and all logistic support activity. Over the 1966-1976 period, the US level of support activities exceeds that of the Soviets by about 25 percent when measured in dollar terms.

For the US, support activities account for almost 50 percent of total defense outlays during the period, while for the Soviets the share is about 40 percent.

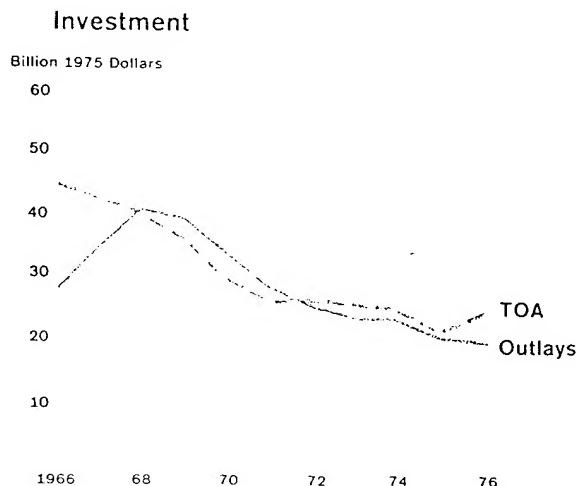
In absolute terms, the US level of activity for support has been declining since 1970, while the Soviet level has been rising throughout the 1966-1976 period. The Soviet level surpasses that of the US for the first time in 1974; in 1976 it is about 10 percent greater.

#### Comparison With Previous Estimate

Estimates of the dollar costs of Soviet defense activities are revised each year to take into account new information and new assessments of the size, composition, and technical characteristics of the Soviet forces as well as improvements in costing methodologies. The US data used for comparative purposes is similarly revised each year to take into account changes in *The Five Year Defense Program*. Both the Soviet and US data are updated annually to reflect the most recent price base possible. In addition to these usual changes, this year's comparison contains a redefinition of mission categories and a change in

Figure 6

#### **US Total Obligational Authority and Outlays for Investment 1966-1976**



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the basis of the US data from total obligational authority (TOA) to outlay terms.

### Principal Changes

A number of important changes have been made in this year's comparisons on both the Soviet and US sides.

On the Soviet side:

- The estimates of Soviet defense manpower were completely reexamined during the past year, resulting in an overall downward revision of about 6 percent in the total manpower of the Soviet defense establishment, including civilians working for the Ministry of Defense. This resulted in a reduction in estimated costs of about \$3 billion per year.
- To remove an element of double counting in previous estimates, costs for Soviet construction troops have been excluded from military personnel costs. These costs are more properly captured in construction costs, which are estimated directly and carried under investment costs. This resulted in an estimated reduction of about \$4 billion per year.
- New intelligence information and improved costing methodologies have caused numerous changes in estimates of production and costs of Soviet military equipment. On balance, however, these changes had little effect on the total dollar cost estimates.

On the US side:

- The price deflators used to convert US data from current to constant dollars have been refined. The use of new deflators has, on balance, raised the constant price costs, with the largest effect in earlier years and almost no effect in recent years.
- Coast Guard and Selective Service outlays have been included, adding about \$1 billion per year, to achieve better comparability.



- The change from TOA to outlays makes the US data more compatible with the data used for estimating the dollar costs of Soviet activities. For the period of this report, outlays have averaged about 3 percent lower than TOA. The difference, however, fluctuates in any given year. Most of the difference is in the investment category because money authorized for investment in one year is generally spent over several years. Investment *TOA* in 1976, for example, is \$3 billion higher than for 1975, but investment *outlays* decline almost \$1 billion because some of the authorized amount will be spent in 1977 and later. (See Figure 6.)

Changes affecting both sides:

- This year the mission categories follow the definitions outlined in the DPPC. This revision provides mission categories that are more familiar to US planners than those used last year.
- This year's comparison is in constant 1975 dollar prices instead of 1974 prices. The change in base year results in an apparent, not real, overall increase in dollar costs for both sides throughout the period.

Effect of Changes on Comparisons

This year's comparison shows a somewhat smaller difference in recent years between the dollar costs of Soviet activities and those of the US. Last year we estimated dollar costs of Soviet defense activities--less military pensions--to be nearly 50 percent greater than those of the US for 1975. In this year's comparisons the difference is closer to 40 percent, for the reasons noted above. Our general assessment remains the same in its essential aspects, however--cumulative costs for the two countries for the period from the mid-sixties to the mid-seventies are essentially equal; the Soviet level began to exceed that of the US in the early seventies; and the margin has increased steadily since.